

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
7 April 2005 (07.04.2005)

PCT

(10) International Publication Number
WO 2005/031635 A1

(51) International Patent Classification⁷: **G06K 9/00**

(21) International Application Number:
PCT/US2004/031594

(22) International Filing Date:
24 September 2004 (24.09.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/505,430 25 September 2003 (25.09.2003) US
60/506,178 29 September 2003 (29.09.2003) US
60/577,981 7 June 2004 (07.06.2004) US

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier applications:

US 60/505,430 (CON)
Filed on 25 September 2003 (25.09.2003)
US 60/506,178 (CON)
Filed on 29 September 2003 (29.09.2003)
US 60/577,981 (CON)
Filed on 7 June 2004 (07.06.2004)

(71) Applicant (for all designated States except US): **PAIEON, INC.** [US/US]; 747 3rd Avenue, New York, NY 10017-2803 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KLAIMAN, Moshe** [IL/IL]; Ha'rava 21/2 Street, 70700 Gedera (IL). **ZARKH, Michael** [IL/IL]; 9 Oranim Street, 54052 Giv'at Shmuel (IL).

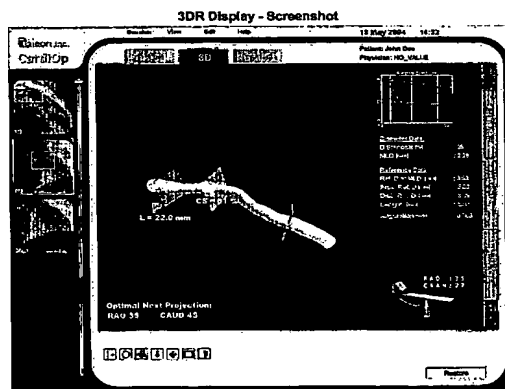
(74) Agent: **HOPKINS, Brian, P.**; Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., 666 Third Avenue, New York, NY 10017 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US (patent), UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR THREE-DIMENSIONAL RECONSTRUCTION OF A TUBULAR ORGAN



(57) Abstract: Embodiments of the present invention include methods and systems for three-dimensional reconstruction of a tubular organ (for example, coronary artery) using a plurality of two-dimensional images. Some of the embodiments may include displaying a first image of a vascular network, receiving input for identifying on the first image a vessel of interest, tracing the edges of the vessel of interest including eliminating false edges of objects visually adjacent to the vessel of interest, determining substantially precise radius and densitometry values along the vessel, displaying at least a second image of the vascular network, receiving input for identifying on the second image the vessel of interest, tracing the edges of the vessel of interest in the second image, including eliminating false edges of objects visually adjacent to the vessel of interest, determining substantially precise radius and densitometry values along the vessel in the second image, determining a three dimensional reconstruction of the vessel of interest and determining fused area (cross-section) measurements along the vessel and computing and presenting quantitative measurements, including, but not limited to, true length, percent narrowing (diameter and area), and the like.



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*